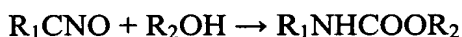


From the Office Action, it appears that the Examiner is presuming the hydrophilic groups cited by Applicant are those functional groups present in the monomers that react to form the polymer. For example, in the sentence bridging pages 3 and 4 of the Office Action, the Examiner refers to the monomeric reaction resulting in polyurethane as follows:



The Examiner asserts “there does not appear to be any hydrophilic groups present in the urethane base chain.” While the Examiner is correct that the resulting amide NHCO is not hydrophilic, the Examiner is not considering the entire base chain, which includes R_1 and R_2 in her example. Applicants hydrophilic groups are present in the polymer base chain, including end groups thereof, and in the monomeric base chains that react to form the polymer, but are not part of the functional groups that react to form the polymer. Thus, in the Examiner’s example, R_1 , R_2 , or both, would include one or more hydrophilic group such as a primary amine or carboxylic acid end group, a quaternary amine, a substituted amine, a carbonyl group, a carboxyl group, or a polyether.

For example, Applicants demonstrate polyamide polymers on pages 8 and 9 of the specification. Annotated copies of pages 8 and 9 highlighting the hydrophilic groups where they appear in the base chain, including as end groups, are attached for the convenience of the Patent Office. Applicants note that the hydrophilic groups can also be present in the dye chromophore incorporated into the base chain, thereby rendering the polymer water-soluble. Specific examples of incorporation of hydrophilic groups other than quaternary amines, carboxylic acid end groups and primary amine end groups are not specifically exemplified in a structure in the specification, but incorporating such other hydrophilic groups into a polymeric backbone is within the knowledge and ability of one skilled in the polymeric arts based on the teachings of the specification at least at pages 5-7.

Applicants ask that the Examiner again review pages 5-7 of the specification, wherein various monomers capable of reacting to form the water-soluble hyperbranched polymer are presented. Examples of such monomers include:

$M^1-R^1-M^2_m$ wherein M^1 and M^2 react to form the polymer;

$M^3-R^2-M^4_p$ wherein M^3 and M^4 react to form the polymer;

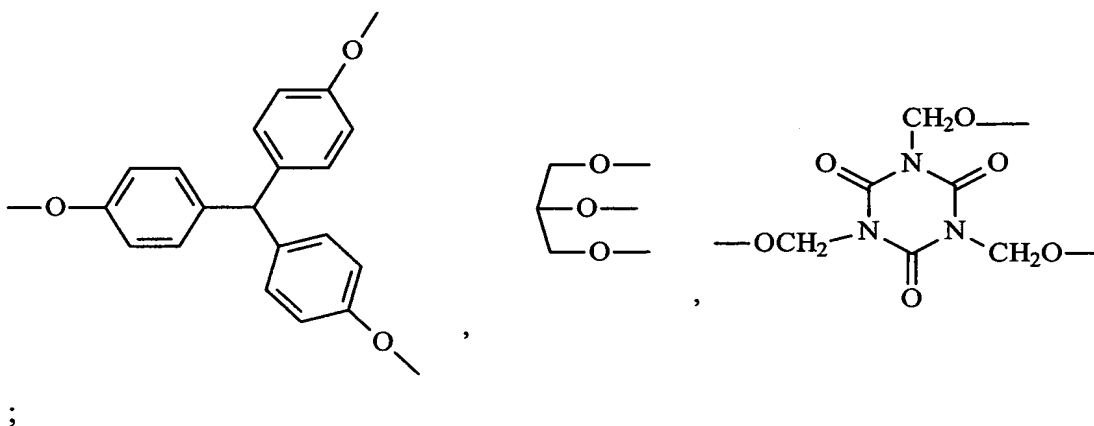
$R^2-M^5_q$ and $R^3-M^6_t$, wherein M^5 and M^6 react to form the polymer;
 $M^1-R^7-M^2_m$ wherein M^1 and M^2 react to form the polymer;
 $M^3-R^7-M^4_p$ wherein M^3 and M^4 react to form the polymer; and
 $R^8-M^5_q$ and $R^9-M^6_t$, wherein M^5 and M^6 react to form the polymer;

wherein

R^1 is a linear or branched alkyl, carbonyl, or aromatic moiety;

R^2 is a linear or branched alkyl or aromatic moiety, for example, $-C_6H_3-$, or $-(CH_2)_s-C(R^6)-$ wherein R^6 is a linear or branched alkyl or aromatic group and s is an integer of 1-12;

R^3 is $-C_6H_4-$, $-C_6H_4-O-C_6H_4-$, $-C_6H_3$, $N(CH_2)_3-$, $-C_4H_8-$, $-C_6H_{10}-$,



R^7 is a linear or branched alkyl, carbonyl, or aromatic moiety containing a dye chromophore; and

R^8 and R^9 are each independently a linear or branched alkyl or aromatic moiety, at least one of which contains a dye chromophore.

As can be seen from the specification, at least R^1 and R^7 can include a carbonyl group, and at least R^3 can include an ether group, carbonyl group, or amine. Any of R^7 , R^8 or R^9 can include a dye chromophore, which could include any hydrophilic group without limitation. Applicants have determined incorporation of such hydrophilic groups into the backbone, including the non-functional end groups, of a polymer render the polymer water-soluble. By also incorporating one or more dye chromophore, with or without a hydrophilic group in the dye chromophore backbone, a water-soluble polymeric dye results, suitable for use in an ink jet ink.

Applicants believe that the rejection under 35 USC §112, first paragraph, has been fully addressed, and that the rejection should be withdrawn.

However, Applicants respectfully request the Examiner contact Applicants' undersigned representative to discuss any remaining issues.

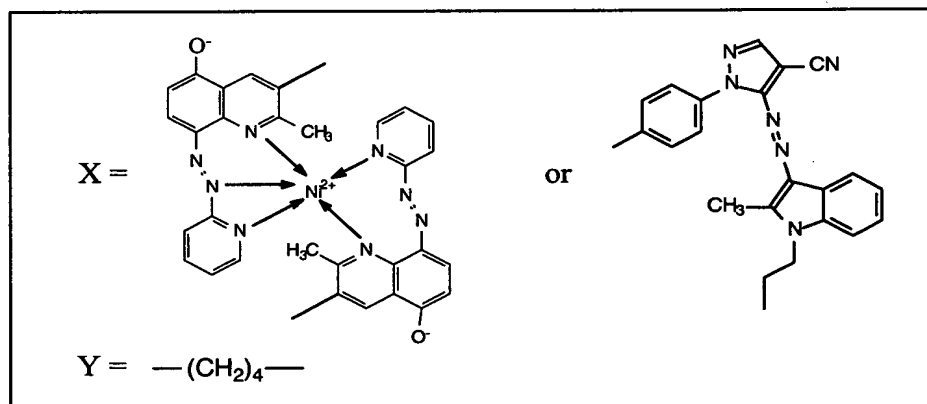
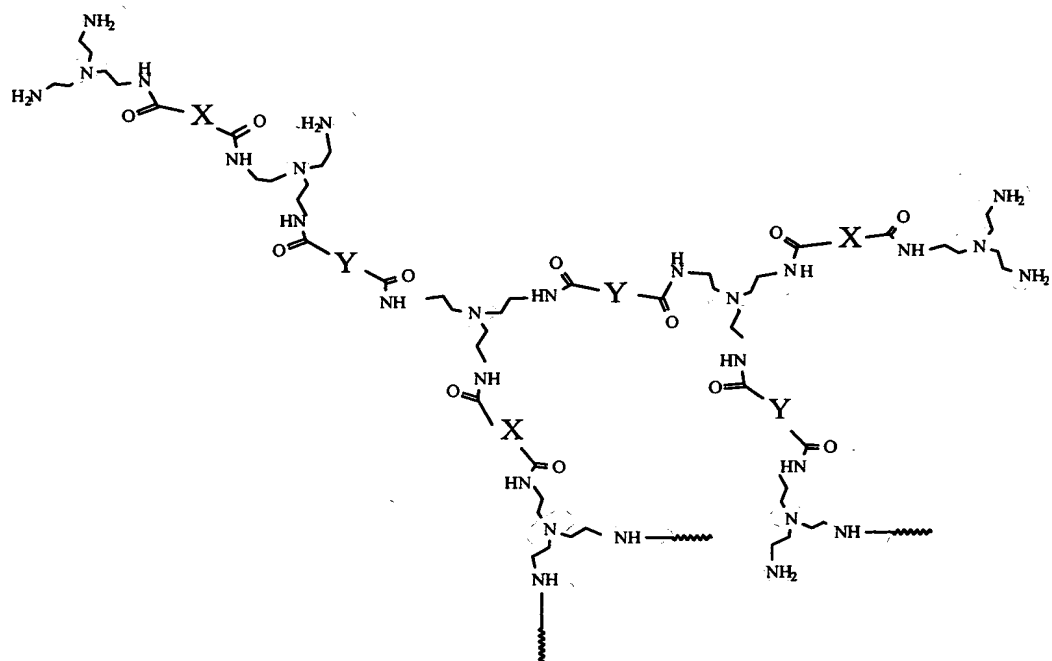
No substantive rejection being of record, and having addressed the current rejection to claim scope, prompt and favorable action in the form of a Notice of Allowance are respectfully solicited.

Respectfully submitted,

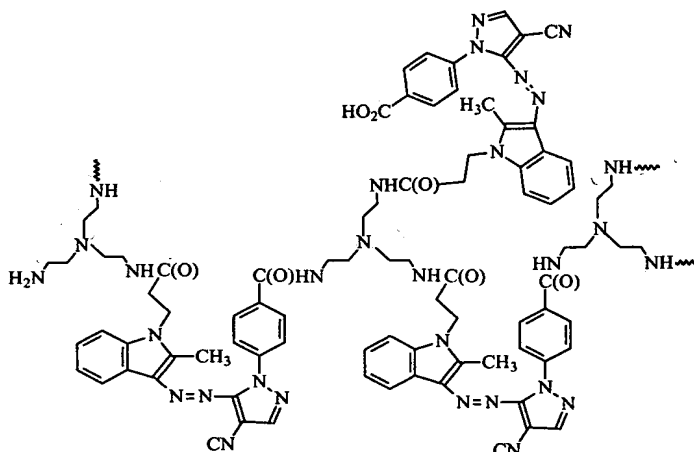
A handwritten signature in black ink, appearing to read 'Kathleen Neuner Manne', is written over a horizontal line.

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and



In general, the above hyperbranched polymeric dyes have a molecular weight from about 500 to about 50,000 and comprise from about 0.2 to about 20%, preferably from about 0.5 to 8%, by weight of the ink jet composition.

A humectant is employed in the ink jet composition of the invention to help prevent the ink from drying out or crusting in the orifices of the printhead. Examples of humectants which can be used include polyhydric alcohols, such as ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, tetraethylene glycol, polyethylene glycol, glycerol, 2-methyl-2,4-pentanediol 1,2,6-hexanetriol and thioglycol; lower alkyl mono- or di-ethers derived from alkylene glycols, such as ethylene glycol mono-methyl or mono-ethyl ether, diethylene glycol mono-methyl or mono-ethyl ether, propylene glycol mono-methyl or mono-ethyl ether, triethylene glycol mono-methyl or mono-ethyl ether, diethylene glycol di-methyl or di-ethyl ether, and diethylene glycol monobutylether; nitrogen-containing cyclic compounds, such as pyrrolidone, N-methyl-2-pyrrolidone, and 1,3-dimethyl-2-imidazolidinone; and sulfur-containing compounds such as dimethyl sulfoxide and tetramethylene sulfone. A preferred humectant for the composition of the invention is diethylene glycol, glycerol, or diethylene glycol monobutylether.

Water-miscible organic solvents may also be added to the aqueous ink of the invention to help the ink penetrate the receiving substrate, especially when the substrate is a highly sized paper. Examples of such solvents include